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TRANSMITTAL FORM

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Total Number of Pages in This Submission

Application Number	10/802,128
Filing Date	03/15/2004
First Named Inventor	GLENN, Bradley J.
Art Unit	3738
Examiner Name	BLANCO, Javier G.
Attorney Docket Number	04005.101

ENCLOSURES *(Check all that apply)*

- [x] Fee Transmittal Form
  - [x] Fee Attached
- [ ] Amendment/Reply
  - [ ] After Final
  - [ ] Affidavits/declaration(s)
- [ ] Extension of Time Request
- [ ] Express Abandonment Request
- [ ] Information Disclosure Statement
- [ ] Certified Copy of Priority Document(s)
- [ ] Reply to Missing Parts/ Incomplete Application
  - [ ] Reply to Missing Parts under 37 CFR 1.52 or 1.53
- [ ] Drawing(s)
- [ ] Licensing-related Papers
- [ ] Petition
- [ ] Petition to Convert to a Provisional Application
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- [ ] After Allowance Communication to TC
- [ ] Appeal Communication to Board of Appeals and Interferences
- [x] Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
- [ ] Proprietary Information
- [ ] Status Letter
- [x] Other Enclosure(s) (please Identify below):
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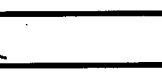
Signature			
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Date	12-4-07	Reg. No.	35,892

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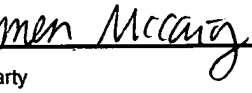
Signature			
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FEE TRANSMITTAL
For FY 2008

☑ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT ($) 255.00

Complete if Known	
Application Number	10/802,128
Filing Date	03/15/2004
First Named Inventor	GLENN, Bradley J.
Examiner Name	BLANCO, Javier G.
Art Unit	3738
Attorney Docket No.	04005.101

METHOD OF PAYMENT (check all that apply)

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FEE CALCULATION

1. BASIC FILING, SEARCH, AND EXAMINATION FEES

	FILING FEES		SEARCH FEES		EXAMINATION FEES		
Application Type	**Fee ($)**	**Small Entity Fee ($)**	**Fee ($)**	**Small Entity Fee ($)**	**Fee ($)**	**Small Entity Fee ($)**	**Fees Paid ($)**
Utility	310	155	510	255	210	105	
Design	210	105	100	50	130	65	
Plant	210	105	310	155	160	80	
Reissue	310	155	510	255	620	310	
Provisional	210	105	0	0	0	0	

2. EXCESS CLAIM FEES

Fee Description	**Fee ($)**	**Small Entity Fee ($)**
Each claim over 20 (including Reissues)	50	25
Each independent claim over 3 (including Reissues)	210	105
Multiple dependent claims	370	185

Total Claims		**Extra Claims**	**Fee ($)**		**Fee Paid ($)**
_____	- 20 or HP =	_____	x _____	=	_____

HP = highest number of total claims paid for, if greater than 20.

Indep. Claims		**Extra Claims**	**Fee ($)**		**Fee Paid ($)**
_____	- 3 or HP =	_____	x _____	=	_____

HP = highest number of independent claims paid for, if greater than 3.

Multiple Dependent Claims	
Fee ($)	**Fee Paid ($)**
_____	_____

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is $260 ($130 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets		**Extra Sheets**		**Number of each additional 50 or fraction thereof**	**Fee ($)**	**Fee Paid ($)**
_____	- 100 =	_____	/ 50 =	_____ (round **up** to a whole number)	x _____	= _____

4. OTHER FEE(S)

	Fees Paid ($)
Non-English Specification, $130 fee (no small entity discount)	
Other (e.g., late filing surcharge): Appeal Brief fee	255.00

SUBMITTED BY

Signature	[signature]	Registration No. (Attorney/Agent) 35,892	Telephone 916-781-6634
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CC
3738

UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.	:	10/802,128
Applicant	:	GLENN, Bradley J.
Filed	:	03/15/2004
TC/A.U.	:	3738
Examiner	:	BLANCO, Javier G.
Docket No.	:	04005.101

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF

The following is a brief in support of an appeal to the Board of Patent Appeals and Interferences with respect to the final rejection mailed on June 5, 2007 by the examiner in the above-identified case. Relief from the examiner's final rejection and allowance of this case is hereby respectfully requested for all pending claims.

I. REAL PARTY IN INTEREST

This application was filed by inventors, Bradley J. Glenn and Gary A. Schneiderman, and has not been assigned. Bradley J. Glenn and Gary A. Schneiderman are thus the real parties in interest.

II. RELATED APPEALS AND INTERFERENCES

Applicant is not aware of any other appeals or any interferences relating to this application.

III. STATUS OF CLAIMS

The following claims are pending in this case: 1-3, 7, 10-12, 14, 15, 17 and 46-53.

The following claims have been canceled in this case: 23-45.

The following claims have been withdrawn from consideration by the examiner: 4-6, 8, 9, 13, 16, 18-22, 46-49 and 52.

The following claims are appealed in this case: 1-3, 7, 10-12, 14, 15, 17, 50, 51 and 53.

Claims 1 and 50 are the only independent claims.

IV. STATUS OF ALL AMENDMENTS FILED SUBSEQUENT TO FINAL REJECTION

The final rejection in this case was mailed on June 5, 2007. No amendments have been filed after June 5, 2007.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Claim 1 is directed to an implant (10) for location within an intervertebral space (S) between a pair of adjacent vertebrae (V) (see especially figures 6-9). The implant (10) includes a helical spring (30) having a plurality of turns about a centerline. This helical spring (30) structure and the plurality of turns about a centerline are described generally at page 14, lines 13-21. The helical spring (30) is adapted to be located with the centerline extending within a plane located between the two vertebrae (V). This "centerline" and "plane" arrangement is clearly shown in figures 6-9. Also, the interrelationship of the helical spring (30) and the associated vertebrae (V) is described at page 14, line 21 to page 15, line 6. The helical spring (30) is adapted to encounter compression loads transverse to the centerline. This compression load direction is best illustrated in figure 6 and is described at page 14, line 21 to page 15, line 6. The helical spring (30) is adapted to flex in a direction transverse to the centerline responsive to the

transverse loads. This load direction and associated flexing is best illustrated in figure 6 and is described at page 14, line 21 to page 15, line 6. At least one of the turns is adapted to have a turn height of at least half of a height of the space (S) between the two vertebrae (V). This height and spacing are best illustrated in figures 6-9 and described at page 14, line 13 to page 15, line 6. The centerline is required to be non-circular (see figures 6-9) when the helical spring (30) is unloaded and at body temperature (see page 14, line 15).

Claim 50 is directed to is directed to an implant (10) for location within an intervertebral space (S) between a pair of adjacent vertebrae (V) (see especially figures 6-9). The implant (10) includes a helical spring (30) having a plurality of turns about a centerline. This helical spring (30) structure and the plurality of turns about a centerline are described generally at page 14, lines 13-21. The helical spring (30) is adapted to be located with the centerline extending within a plane located between the two vertebrae (V). This "centerline" and "plane" arrangement is clearly shown in figures 6-9. Also, the interrelationship of the helical spring (30) and the associated vertebrae (V) is described at page 14, line 21 to page 15, line 6. The helical spring (30) is adapted to encounter compression loads transverse to the centerline. This compression load direction is best illustrated in figure 6 and is described at page 14, line 21 to page 15, line 6. The helical spring (30) is adapted to flex in a direction transverse to the centerline responsive to the transverse loads. This load direction and associated flexing is best illustrated in figure 6 and is described at page 14, line 21 to page 15, line 6. The centerline is required to be non-circular (see figures 6-9) when the helical spring (30) is unloaded and at body temperature (see page 14, line 15).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. Rejection of claims 1-3, 7, 10-12, 14, 15, 17, 50, 51 and 53 as being indefinite under 35 U.S.C. §112, second paragraph.

B. Rejection of claims 1-3, 7, 10-12, 14, 15, 17, 50, 51 and 53 as being anticipated by Lam (US 5,556,413) under 35 U.S.C. §102(b).

C. Rejection of claims 1-3, 7, 10-12, 14, 15, 17, 50, 51 and 53 as being anticipated by Steffen (DE 101 30 825 A1) under 35 U.S.C. §102(b).

D. Rejection of claims 1-3, 14, 50, 51 and 53 as being anticipated by Lin (US 5,716,416) under 35 U.S.C. §102(b).

VII. ARGUMENT

A. All of the claims are sufficiently definite and sufficiently distinctly claim and point out with particularity the subject matter of this invention, to satisfy the requirements of 35 U.S.C. §112, second paragraph.

1. The term "unloaded" has been improperly interpreted.

Independent claim 1 requires, in relevant part, "said centerline being non-circular when said helical spring is unloaded and at body temperature" (emphasis added). The examiner cites this limitation as "vague, rendering claim 1 indefinite as to the scope of the invention." The examiner goes on to explain that "nowhere in claim 1 there is an indication the implant is loaded into (or to) an instrument/tool." This quote from the examiner illustrates that the examiner has interpreted the term "loaded" (and by inference the actual term "unloaded") to the act of putting something into or onto a structure. While this is one interpretation of the root word "load," this verb interpretation of the root word "load" presumed by the examiner is not correct in the context of this application.

Rather, the term "load" can also be a noun meaning "the overall force to which a structure is subjected in supporting a weight or mass or in resisting externally applied forces" (*American Heritage Dictionary of the English Language, Third Edition, second noun interpretation*). This noun definition for the root word "load" is consistent with other portions of claim 1 and consistent with the written description of

this application. The examiner's interpretation of the root word "load" is not consistent with the written description of this application. Hence, the noun definition should be followed.

In particular, line 6 of claim 1 specifies "said helical spring adapted to encounter compression loads" (emphasis added). Line 9 of claim 1 specifies "said helical spring adapted to flex in a direction transverse to said centerline responsive to said transverse loads" (emphasis added). These citations from claim 1 clearly are not referring to the process of placing one object upon or within another object, such as a cannula. Rather, these references to the root word "load" earlier in claim 1 relate to forces being applied to the implant. To be consistent, the term "unloaded" complained of as indefinite at line 12 of claim 1 should also be interpreted as meaning "without external forces applied."

In addition, throughout the written description every time the root word "load" appears, it is in the context of forces being applied, rather than locating one item upon or within another item. In particular, see page 12, line 3; page 13, lines 1, 2, 9 and 15; page 15, lines 3 and 6; and page 19, line 5. Thus, to be consistent with the written description, the term "unloaded" in claim 1 should similarly be interpreted as relating to forces being removed.

This written description does discuss placing the implant within a cannula. While such placement might conceivably be referred to as "loading" or "unloading" the implant into or out of the cannula, these are not the terms utilized in the written description. Rather, the written description utilizes the term "placement" at page 13, line 21 and the term "discharged" at page 15, line 11 and the term "released" at page 15, line 26 and page 19, line 10. Thus, even when applicant is referring to the process of placing one object within or upon another object, it does not use forms of the term "load."

In view of the foregoing, applicant respectfully submits that the term "unloaded" has been improperly interpreted as relating to taking the implant out of the cannula. In

contrast, the term "unloaded" should have been interpreted consistent with other portions of claim 1 and the written description as being in a state without external forces applied.

When the term "unloaded" is so properly interpreted, applicant respectfully submits that it is sufficiently definite and distinctly points out with particularity what is claimed by the applicant as the invention. In particular, claim 1 requires that the helical spring have a centerline that is non-circular when the helical spring is free of forces acting thereupon, or as simply stated, when the helical spring is "unloaded."

The examiner had rejected dependent claims 2, 3, 7, 10-12, 14, 15 and 17 under §112, second paragraph merely because they depend from claim 1 with the perceived indefiniteness discussed above. Because claim 1 is not indefinite, applicant respectfully submits that claims dependent from claim 1 are also sufficiently definite to satisfy the requirements of §112, second paragraph.

2. *Claim 12 does specify relative directions of features thereof to particularly point out and distinctly claim what is recited therein.*

Claim 12 is directed to a helical spring that is "shorter . . . than it is wide." Such a feature is clearly shown in the drawings in figures 17-19. At issue is the degree to which claim 12 has captured this feature with appropriate language to clearly point out what is claimed. While claim 12 could have been written merely "wherein said helical spring is shorter than it is wide," one additional clause was placed within commas and one additional clause was placed after a semicolon to make clear what direction is considered to be the "shorter" direction and what direction is considered to be the wider direction. Applicant respectfully submits that these added clauses within claim 12 still further enhance the clarity of claim 12.

In particular, the first clause between commas is "in a direction perpendicular to said centerline and adapted to be oriented vertically when implanted." This clause is referring to the "shorter" direction. Note that when a direction is identified as being

perpendicular to a centerline, numerous different directions can be specified that are all perpendicular to that line. Hence, the claim goes further to specify the particular direction that is oriented vertically. Because the implant could presumably have various different vertical directions merely be rotating the implant, it was specified in claim 12 what the vertical direction was considered to be relative to the implant after being implanted. While such terminology might be vague if considered completely in a vacuum, that is not the case with claim 12. Rather, claim 12 has been accompanied by an extensive written description and included drawing figures to help explain what is meant by these terms.

After the semicolon in claim 12, an additional explanatory clause is provided as follows: "said width defined as being in a direction perpendicular to said centerline and adapted to be oriented horizontally when implanted." Thus, both the width and the shorter direction are perpendicular to the centerline, but one of them is horizontal when the implant is implanted and the other is vertical when the implant is implanted. With each of these directions specified, no ambiguity is left as to what is considered to be the shorter direction and what is considered to be the width direction. Rather the shorter direction is specified as associated with a vertical direction and the width is specified as being associated with a horizontal direction. This is also consistent with the expectation in the English language that when the term "short" is utilized that a vertical direction is implied and that when the term "wide is utilized a horizontal direction is implied.

The examiner stated that "it seems claim 12 claims the width as shorter than the width." Applicant respectfully submits that to reach such a conclusion one would need to read claim 12 in an illogical fashion. Applicant submits that claim 12 does not have multiple logical common sense interpretations, but only one logical common sense interpretation, namely that it is limiting the claimed implant to one having a helical spring that is shorter than it is wide and with the direction associated with the shorter dimension and the direction associated with the width dimension further specified

therein. If a second logical interpretation existed for claim 12, applicant could see the potential for vagueness and indefiniteness. However, because only one logical common sense conclusion can be reached from the reading of the language of claim 12, applicant respectfully submits that claim 12 is sufficiently definite to satisfy the requirements of §112, second paragraph.

3. Claim 17 does specify relative directions of features thereof to particularly point out and distinctly claim what is claimed therein.

Applicant notes that the limitations of claim 17 track closely to the limitations of claim 12. Thus, all of the arguments presented above with regard to claim 12 in Section A(2) are equally applicable to claim 17. Furthermore, claim 17 is even more definite than claim 12 in that it utilizes the phrase "turn height" rather than "shorter" and places the limitation "turn height" in contrast with "turn width." Rather than comparing the dimensional term "shorter" with the directional term "width" from claim 12, in claim 17 the dimensional term "turn height" is contrasted with the dimensional term "turn width." Simply stated, claim 17 is directed to an implant having turns with "said turn height . . . less than a turn width." The remaining portions of claim 17 placed between commas and after a semicolon merely further illustrate what directions are specified to add further clarity to claim 17. Thus, claim 17 should now also be considered to be sufficiently definite to satisfy the requirements of §112, second paragraph.

4. The term "unloaded" has been improperly interpreted.

Applicant notes that precisely the same limitation is at issue with regard to claim 50 as was at issue with regard to claim 1. Rather than belabor the record, applicant notes that for the reasons specified above in Section A(1), with regard to claim 1, that claim 50 is also in a form that is sufficiently distinct to satisfy the requirements of §112, second paragraph.

B. Claims 1-3, 7, 10-12, 14, 15, 17, 50, 51 and 53 recite limitations which are not anticipated by Lam, such that these claims satisfy conditions for patentability found in 35 U.S.C. §102(b).

1. Lam does not teach a "spring" as required by the claims.

Each of the claims similarly includes the limitation of "a helical spring having a plurality of turns about a centerline" (citation taken from claim 1, line 3). Lam discloses "a stent 1 having an expandable body 5" (column 6, line 23). This body 5 is taught to have a plurality of helically shaped cuts 30 (column 6, line 32) with the result forming "helically shaped elements 32" (column 6, line 33). Thus, applicant admits that Lam does include elements that are helical. However, not all structures that have an element that extends helically can be considered to be a spring and in fact the Lam stent does not function as a spring such that the claims of this application which are limited to implants including "a helical spring" are not anticipated by Lam.

Initially, applicant notes that the Court of Appeals for the Federal Circuit has made clear that ". . . anticipation requires that each and every element of the claimed invention be disclosed in a single prior art reference." Akzo N.V. v. United States ITC, 808 F.2d 1471, 1 U.S.P.Q.2d 1241 (Fed. Cir. 1986). Further, "those elements must either be inherent or disclosed expressly. . ." Verdegaal Bros., Inc. v. Union Oil Co., 814 F.2d 628, 2 U.S.P.Q.2d 1051 (Fed. Cir. 1987). ". . . and must be arranged as in the claim[s]. . ." Carella v. Starlight Archery & Pro Line Co., 804 F.2d 135, 231 U.S.P.Q. 644 (Fed. Cir. 1986). ". . . [The] absence from the reference of any claimed element negates anticipation." Kloster Speedsteel AB v. Crucible Inc., 793 F.2d 1565, 230 U.S.P.Q. 81 (Fed. Cir. 1986). Because Lam does not teach a spring, either inherently or expressly, these claims are not anticipated by Lam, and satisfy the patentability requirements of §102.

A review of Lam indicates that the term "spring" is only found twice therein. On each occasion the term "spring" is used within the background of Lam where Lam is

describing other prior art stents. For instance, at column 2, line 35 another type of expandable stent is described as "formed by a helical metal or plastic spring." However, this statement in Lam is not describing the Lam stent, but rather stents of Fischell, Wilkoff and Maass. These other patents have not been cited by the examiner against this application and are not in any way incorporated into the disclosure of Lam. Furthermore nothing in Lam suggests that Lam is following the approach of these other patents.

Rather, Lam describes an extendible stent that is positioned over a balloon portion of the catheter and expanded from a reduced diameter to an enlarged diameter in an irreversible fashion. Perhaps most relevant in the proper interpretation of Lam is the disclosure at column 11, lines 35 to column 12, line 10. The detailed process of implanting the stent taught by Lam is described where the physician controls expansion of the stent (1) to an enlarged diameter. The stent (1) is first placed where desired within the body lumen and then undergoes an irreversible expansion through the dilation of a balloon (column 11, lines 65 to column 12, line 9). The "irreversibility" of this expansion is explicitly stated at column 12, line 4.

After the dilation balloon is deflated, the dilation balloon is removed but the stent remains in place. If the stent taught by Lam were a spring such as suggested in citation of Lam against the claims of this application, when the balloon was deflated, the stent (1) would again collapse to its original form. Instead, Lam is particularly configured so that it undergoes an irreversible one-way expansion. Springs do not merely expand and then not contract. Rather, springs return elastically back to their original form when loads are removed.

Applicant notes that the claims of this application are directed to implants for an intervertebral space. These implants thus function with the muscular skeletal structure of the body, rather than with soft tissues, such as blood vessels and body lumens such as those supported by the stent taught by Lam. Critical to the operation of the implant of

this invention is that it function as a spring, as explicitly recited in claim 1 by requiring that the implant comprise "a helical spring." In contrast, stents merely act to keep a collapsed vein, artery or other body lumen propped up in an open configuration. Such stents as those taught by Lam do not function as springs, just as a pole propping up a tent does not function as a spring.

It is not proper for the examiner to imply that the term "spring" is within the disclosure of Lam. If Lam were directed to a structure for use between bones or other portions of the muscular skeletal structure of a body, even without utilizing the term "spring" such a spring-like function might be implied. However, such is not the case with Lam that is directed to treatment of soft body tissues such as lumens. Lam should only be construed as properly disclosing structures that do not exhibit spring, or spring-like character.

Because Lam neither explicitly describes its stent as a spring nor implicitly suggests that it behaves as a spring, applicant respectfully submits that these claims that each require a spring are not anticipated by Lam.

2. *Dependent claim 7 requires a particular "turn height" that is not anticipated by Lam.*

In addition to the arguments presented above in Section B(1), claim 7 further benefits from its limitation to a "turn height" that "is substantially similar to a height of the space between the two vertebrae." A review of Lam did not appear to define dimensions other than those which would typically be required for placement within a body lumen. Lam mentions at column 12, lines 37-45 that it is not limited to particular dimensions. This broad statement within Lam is not the same as explicitly teaching or implying any particular turn height, as required by claim 7. Thus, at best, Lam merely states that it can be provided at various different heights. Applicant respectfully submits that such broad statements by Lam do not have sufficient detail to qualify as a disclosure suitable for citation under §102 to support a finding of anticipation.

Accordingly, applicant respectfully submits that claim 7, for this additional reason, is not anticipated by Lam.

3. Lam does not teach an "ellipsoidal outline" as required by claim 11.

Initially, applicant notes that the examiner's action rejecting claim 11, among others, as anticipated by Lam, did not include any reference to portions of Lam which teach an "ellipsoidal outline." Thus, applicant initially submits that the examiner has not made an initial showing of anticipation of all of the limitations required by claim 11.

Furthermore, applicant notes that the Lam contour, perhaps best illustrated in figure 2, has an outline which exhibits a compound curve extending from cylindrical ends of a lesser diameter to a cylindrical midportion of a greater diameter. The contour starts as horizontal at the end, angles upward to be diagonal and then angles downward to be horizontal again at the greatest diameter midportion.

An ellipse is an outline which has a greatest height or diameter in a midportion and a lesser height or diameter at ends thereof. Continuously between the ends and the middle greater and greater heights are achieved as the middle is approached. The curvature of such an ellipsoidal body is always in a concave down direction, such as would be exhibited by a perfect sphere, or an egg, or an ellipse. In contrast, Lam near its ends diverges away from such an "ellipsoidal outline." This "ellipsoidal outline" is best seen with regard to this invention in figures 7-9 and allows the implant to best match adjacent vertebrae contours. Accordingly, applicant respectfully submits that for this reason claim 11 is not anticipated by Lam.

4. Lam does not teach an implant that is shorter than it is wide as required by claim 12.

Initially, applicant notes that in the final Office action the examiner did not explain how Lam anticipated the limitations of claim 12. Thus, applicant submits that the examiner has not yet overcome the initial burden to identify the basis for a finding of anticipation of claim 12 under §102, based on the teachings of Lam.

Furthermore, applicant notes that Lam only teaches a stent that is radially symmetrical about a centerline, and without any disclosure of a structure which is "shorter . . . than it is wide" as required by claim 12. Accordingly, applicant respectfully submits that claim 12 is not anticipated by the teachings of Lam.

5. Lam does not teach placing the stent thereof within a delivery cannula as recited by claim 14.

The examiner stated in the final Office action that "the helical spring is adapted to be placed within a delivery cannula (see column 2, lines 34-40) or an outer catheter sheath (see figure 9)" (final Office action, page 5, lines 3-5). Applicant has carefully reviewed Lam and submits that no such placement within a cannula or catheter is disclosed. Lam teaches various catheter structures for use in the implantation of the stent represented by body 5. Perhaps this delivery apparatus is best shown in figures 9A-9C. While one might assume that the stent (1) resides within the catheter 100 (figure 9A) that is not actually consistent with the written description of Lam. Rather, Lam describes a scenario where first the threading tubular member (180) is passed through the lumen and that then the catheter (100) slides along the tubular member (180). The stent (1) is described as being in its contracted state and mounted on the distal end of the catheter (100) (column 10, lines 11-27). Applicant notes that in this arrangement the stent (1) is never residing within the catheter (100), but rather is on the catheter (100) and then the catheter (100) pushes the stent (1) along.

Because Lam fails to disclose a helical spring adapted to be elongated and placed within a delivery cannula, as required by claim 14, applicant respectfully submits that claim 14 is not anticipated by the teachings of Lam.

6. Lam does not teach an implant that is shorter than it is wide as required by claim 17.

Claim 17 includes limitations similar to those of claim 12. Rather than belabor the record, applicant merely notes that for the reasons specified above in Section B(4), that

claim 17 includes requirements that are not anticipated by Lam.

C. Claims 1-3, 7, 10-12, 14, 15, 17, 50, 51 and 53 recite limitations which are not anticipated by Steffen such that these claims satisfy the conditions for patentability found in 35 U.S.C. §102(b).

1. Steffen does not teach a "helical spring adapted to be located with said centerline extending within a plane located between the two vertebrae."

Initially, applicant provides background for this limitation of each of these claims by reference to figures 7-9 of this application. The centerline of the implant can clearly be visualized through reference to figure 7 (a top view), figure 8 (a front view with the vertebrae in section) and figure 9 (a perspective view). Note from the previous limitation that the helical spring is described as having "a plurality of turns about a centerline." Hence, this centerline must be a line that fits along a center of the implant so that the turns can extend about it. Claim 1 goes on to require that the helical spring be adapted to be located "with said centerline extending within a plane located between the two vertebrae." As clearly seen in figures 7-9, this centerline does not pass through vertebral bone structures. Rather, it extends between the two vertebrae through gaps between the adjacent vertebrae. With particular reference to figure 8, a plane can be visualized which resides between the two vertebrae. This centerline of the stent is adapted to be located extending within this plane, as required by claim 1.

Initially, it is unclear if the examiner is arguing that Steffen teaches this limitation relating to the helical spring centerline or whether the examiner is arguing that this limitation is "intended use" and so does not carry any "patentable weight in absence of any distinguishing structure." While the examiner appears to be taking the position that Steffen teaches this limitation, applicant addresses both potential arguments.

First, applicant acknowledges the proposition that when intended use is recited with no distinguishing structure, that such recitations cannot carry any patentable weight. However, applicant also notes that not all functional recitations are mere

intended use having no patentable weight. For instance, applicant references MPEP §2173.05(g) citing *In re Swinehart* 439 F.2d 210, 169 USPQ 226 (CCPA 1971) for the principle that "functional language does not in and of itself, render a claim improper." The MPEP goes on to establish that functional language "must be evaluated and considered, just like any other limitation of the claim, for what it fairly conveys to a person of ordinary skill in the pertinent art in the context in which it is used." Applicant notes that no rejection of this language was raised under 35 U.S.C. §112, second paragraph, nor should it have been.

Applicant respectfully submits that this limitation providing the "helical spring adapted to be located with said centerline extending within a plane located between the two vertebrae" is not the "absence of any distinguishing structure" as suggested by the examiner (final Office action, page 6, lines 3 and 4) but rather does provide tangible limiting details for the implant of claim 1. It specifies how the centerline is able to be oriented. The mere fact that this detail is presented largely in the form of a functional limitation rather than structure is not required for patentable weight.

The examiner seems to be acknowledging this by also explaining in detail how Steffen is interpreted to include this limitation of claim 1. Also, the examiner never specified in particular which limitations of the claims were deemed to not deserve patentable weight, and may well have been thinking of limitations other than this one.

With regard to the teachings of Steffen, the examiner argues that "the location of said 'plane located between the two vertebrae' is <u>not exactly defined</u>, and is therefore arbitrary. The space between two vertebrae may comprise several planes. Also, it is noted that the 'centerline' <u>is not defined</u> (e.g. "from a proximal end of the implant to a distal end of the implant") in the claim language, and is therefore arbitrary as well" (final Office action, page 6, lines 15-19, emphasis and parenthesis in original). Applicant respectfully submits that the examiner is incorrect and that the location of the plane <u>is defined</u> in a manner other than an arbitrary manner and that the orientation of the

centerline is defined in a manner other than an arbitrary manner.

With regard to the "plane located between the two vertebrae" applicant notes the following. As can be seen in figures 6-9, vertebrae (V) have a somewhat irregular shape with gaps therebetween referred to as an intervertebral space (S) (figures 6 and 8). If one were to attempt to orient a plane between two vertebrae (V), it can be seen from figures 6 and 8 that such a plane could be identified within the space (S). The examiner in fact notes that "the space between two vertebrae may comprise several planes" (final Office action, pages 16 and 17).

While applicant acknowledges that this true, applicant would identify such "several planes" as being closely related to each other. For instance, perhaps various different planes angled about 5° away from each other might still fit "between the two vertebrae" as required by claim 1. Thus, while an infinite number of different planes can be defined generally, only a subset of all planes can be located "between the two vertebrae" as clearly depicted in figures 6 and 8. Claim 1 thus limits what is required by claim 1 from any possible plane to a specific subset of planes that can fit between two vertebrae. This is not vague. Rather, it limits the claim to particular planes.

Claim 1 also requires that the centerline extend within this plane. The examiner takes the position that "the 'centerline' is not defined" (emphasis in original). However, claim 1 requires at line 3 "a helical spring having a plurality of turns about a centerline." Claim 1 then goes on to specify the "centerline extending within a plane located between the two vertebrae."

The centerline cannot have any orientation and still be within the scope of this limitation of claim 1. Rather, the centerline must be within a plane that is located between the two vertebrae. The centerline is thus defined. If it could be in any orientation or position it would not be defined. This is not the case.

Turning to the teachings of Steffen, the question is whether or not the helical spring taught by Steffen is "adapted to be located with said centerline extending within

a plane located between the two vertebrae" as required by claim 1. Steffen is a helical spring and it is taught to be placed between vertebrae and is sized and configured to fit between two vertebrae. However, Steffen can only fit between the two vertebrae when a centerline of Steffen is extending within a plane that is located passing through the vertebrae.

Note from the figure of the Steffen reference that includes the helical spring therein that a centerline of the spring is oriented vertically on that page. The elongated nature of Steffen in a horizontal direction clearly indicates that Steffen is designed to fit within the intervertebral space with the centerline extending vertically along the spine and through the vertebrae rather than oriented horizontally and in a plane located between the two vertebrae.

If Steffen were to be rotated 90° it would not fit between adjacent vertebrae. Hence, Steffen is not adapted to be located with his implant's centerline extending within a plane located between the two vertebrae, as explicitly required by claim 1. Accordingly, applicant respectfully submits that these claims which all include this same limitation (see claims 1 and 50), are not anticipated by Steffen.

2. *Steffen does not teach the requirement of a "helical spring adapted to encounter compression loads transverse to said centerline" and "adapted to flex in a direction transverse to the centerline responsive to transverse loads," as required by the claims.*

Nearly all of the arguments presented above in Section C(1) apply equally to both this limitation relating to being adapted to encounter compression loads, as to the previous limitation of being adapted to be located with the centerline extending within a plane located between the two vertebrae. Rather than repeat all of the previous arguments relating to the appropriate utilization of functional limitations within a claim and what is properly meant by the "centerline," applicant merely refers to the above arguments for these propositions.

Furthermore, applicant notes from the teachings of Steffen that Steffen is only configured to encounter compression loads coaxial with the centerline of Steffen, rather than "transverse to this centerline" as required by claim 1. The examiner argues that "the centerline may arbitrarily be the line across the largest turn of the implant, and hence the implant is "adapted to encounter compression loads transverse to said centerline" and "adapted to flex in a direction transverse to said centerline responsive to said transverse loads" (final Office action, page 6, line 19 to page 7, line 2).

Applicant respectfully submits that interpreting the centerline as arbitrarily being the line across the largest turn of the implant or any other interpretation for the centerline other than that specified in the claims is not proper. Namely, claim 1 requires "a helical spring having a plurality of turns about a centerline." The centerline is thus the line that passes through the middle of the helical spring with the turns oriented about this centerline. Any other interpretation would be inconsistent with claim 1.

Steffen does teach a helical spring that has a plurality of turns about a centerline. This centerline is extending in a vertical direction in the figure of Steffen and extending vertically with relationship to a spine when implanted. Such is the only common interpretation of the teachings of Steffen. Thus, Steffen is configured to encounter compression loads coaxial with a centerline and the spring of Steffen is taught to flex in a direction coaxial with the centerline, rather than in a transverse direction. Nothing in Steffen suggests anything about any performance characteristics of Steffen when loaded in a direction transverse to the centerline, and Steffen does not teach use in such an orientation.

Accordingly, applicant respectfully submits that each of these claims, because they require a helical spring adapted to encounter compression loads transverse to the centerline and adapted to flex in a direction transverse to the centerline responsive to transverse loads, is not anticipated by the teachings of Steffen.

3. Claim 2 further specifies limitations not taught by Steffen and in a form that carries patentable weight.

Claim 2 depends from claim 1 and thus benefits from the arguments presented above with respect to each of the claims in Sections C(1) and C(2). Furthermore, claim 2 further requires "wherein said centerline lies within a centerline plane, said centerline plane adapted to pass between the two vertebrae when said helical spring is located between the two vertebrae." This claim specifically correlates the centerline of the helical spring of the implant with a centerline plane. A functional detail of the centerline plane is then recited, namely that the centerline plane is "adapted to pass between the two vertebrae when said helical spring is located between the two vertebrae."

This limitation relating to the "centerline plane" deserves patentable weight. First, as cited above, functional language is not per se improper within a claim, but rather deserves patentable weight so long as it can convey a limitation to a person of ordinary skill in the pertinent art. In this case, claim 2 is only directed to implants that have a centerline that is within a centerline plane and with the centerline plane able to pass between two vertebrae. Any implants that have centerlines that lie within a center plane that cannot pass between two vertebrae would be excluded from claim 2.

These limitations are generally in the form of size and shape limitations that have been expressed functionally other than with specific dimensions or other characteristics. As explained previously, such limitations are not per se inappropriate. With reference to Steffen, a centerline is provided and a plane could be hypothesized in which that centerline is oriented. However, any such plane in which the centerline would be oriented with the implant taught by Steffen would not pass between the two vertebrae, but rather would go through the vertebrae. Hence, claim 2 as properly interpreted is not anticipated by the teachings of Steffen, such that claim 2 is patentably distinct from the teachings of Steffen.

4. Steffen fails to teach a helical spring "shorter . . . than it is wide" as required by claim 12.

Initially, applicant notes that the examiner has not provided any direction as to which limitations of Steffen are considered to teach the requirements of claim 12. Hence, applicant respectfully submits that the examiner has not met an initial burden of coming forward with evidence to specify in what way Steffen anticipates the requirements of claim 12.

Furthermore, applicant references figures 17-19 of this application as evidencing that feature required by claim 12 that the spring be shorter than it is wide. Steffen teaches a helical spring, but nothing in Steffen suggests that this helical spring is anything other than radially symmetrical about a centerline thereof and otherwise configured as required by claim 12.

Claim 12 doesn't just arbitrarily specify what direction is the shorter direction and what direction is the wider direction, but rather provides the shorter and wider directions as each in directions perpendicular to the centerline, with one shorter direction being oriented vertically when the implant is implanted and with the wider direction being oriented horizontally when the implant is implanted.

Such specific orientations for the shorter and wider directions of the implant required by claim 12 are distinct from the teachings of Steffen. Steffen does teach a helical spring that is shorter along the centerline than it is wide in a radial direction. However, this is distinct from the requirements of claim 12 as specified above. Accordingly, claim 12 includes limitations which are not taught by Steffen, such that claim 12 is not anticipated by Steffen.

5. Steffen does not teach use of nickel titanium alloy to form the implant or use of a delivery cannula after elongation of the spring along the centerline, as required by claim 14.

Initially, the examiner notes that the examiner did not specify in the final Office action with any particularly which portions of Steffen teach the requirements of claim 14 that the helical spring be formed of nickel titanium alloy or that the spring be adapted to be elongated along a centerline, such as for placement within a delivery cannula. Thus, applicant submits that the examiner has not met an initial burden of establishing how Steffen anticipates the requirements of claim 14.

Furthermore, applicant's review of Steffen has failed to disclose either of these limitations required by claim 14. Accordingly, applicant respectfully submits that claim 14 is not anticipated by Steffen.

6. Steffen fails to teach a helical spring "shorter . . . than it is wide" as required by claim 17.

The basis for this argument is the same as that provided above with respect to Section C(4). Rather than belabor the record, applicant merely notes that for the reasons specified above in Section C(4), that claim 17 includes limitations which are not anticipated by Steffen, such that claim 17 is patentably distinct from the teachings of Steffen.

D. Claims 1-3, 14, 50, 51 and 53 recite limitations which are not anticipated by Lin, such that these claims satisfy the conditions for patentability found in 35 U.S.C. §102(b).

1. Lin does not teach a "centerline being non-circular when said helical spring is unloaded and at body temperature" as required by each of these claims.

Applicant notes that both independent claims 1 and 50 each require "said centerline being non-circular when said helical spring is unloaded and at body temperature." This is the limitation that was discussed in detail in Section A above relating to rejection of the claims under 35 U.S.C. §112, second paragraph. The examiner argues with reference to figures 1B and 1C of Lin that Lin teaches "a helical spring having a plurality of turns about a center-line, which center-line is substantially

linear when said helical spring is located within the cannula/endoscope/tool 300/500" (final Office action, page 7, lines 5-8). This tool 300/500 is variously shown as slightly curving or straight. However, this limitation of claim 1 references the centerline and its shape when it is not under any load (e.g. the absence of any force applied thereto). This matter was discussed at length in Section A and is incorporated herein.

For the centerline of the implant taught by Lin to be non-circular, it must be forced into this shape such that it is under a load. When the implant taught by Lin is in an unloaded state, it attains a circular form, such as that depicted in figures 1B and 1C. In contrast, independent claims 1 and 50 require that the centerline be non-circular when the helical spring is unloaded.

Accordingly, applicant respectfully submits that Lin does not teach an implant with a centerline that is non-circular when the helical spring is unloaded, such that independent claims 1 and 50, as well as dependent claims 2, 3, 14, 51 and 53 are not anticipated by Lin.

2. Lin does not teach a linear centerline when "unloaded, as required by claim 51."

Reference to Lin shows that when the implant taught by Lin is not under any load, it takes on a circular form, and clearly not a linear form as required by claim 51. Accordingly, claim 51 is not anticipated by the teachings of Lin.

3. Lin does not teach turns having greater and lesser heights as required by claim 53.

Claim 53 requires "wherein turns adjacent a middle of said helical spring have a height greater than turns of said spring adjacent ends of said helical spring." A review of Lin shows only a helical spring which has turns of a constant height. Hence, this limitation of claim 53 is clearly not anticipated by Lin, and claim 53 is in a form not anticipated by Lin, but warranting patentable status. Furthermore, applicant notes that this limitation in claim 53 is similar to that of claim 15 which the examiner does not

include in the list of claims rejected as anticipated by Lin. For the foregoing reasons, claim 53 is not anticipated by the teachings of Lin.

VIII. CLAIMS

Claim 1: An implant for location within an intervertebral space between a pair of adjacent vertebrae, the implant comprising:

a helical spring having a plurality of turns about a center line;

said helical spring adapted to be located with said center line extending within a plane located between the two vertebrae;

said helical spring adapted to encounter compression loads transverse to said center line;

said helical spring adapted to flex in a direction transverse to said center line responsive to said transverse loads;

at least one of said turns adapted to have a turn height of at least half of a height of the space between the two vertebrae; and

said center line being non-circular when said helical spring is unloaded and at body temperature.

Claim 2: The implant of Claim 1 wherein said center line lies within a center line plane, said center line plane adapted to pass between the two vertebrae when said helical spring is located between the two vertebrae.

Claim 3: The implant of Claim 2 wherein said center line is substantially linear.

Claim 7: The implant of Claim 1 wherein said turn height of said at least one turn is substantially similar to a height of the space between the two vertebrae.

Claim 10: The implant of Claim 1 wherein said helical spring exhibits a substantially barrel shaped outline with ends of said helical spring shorter in height than a middle portion of said helical spring.

Claim 11: The implant of Claim 1 wherein said helical spring is substantially ellipsoidal in outline.

Claim 12: The implant of Claim 11 wherein said helical spring is shorter, in a direction perpendicular to said center line and adapted to be oriented vertically when implanted, than it is wide; said width defined as being in a direction perpendicular to said center line and adapted to be oriented horizontally when implanted.

Claim 14: The implant of Claim 1 wherein said helical spring is formed of a nickel titanium alloy having a martensite phase and an austenite phase, said spring adapted to be elongated in a direction along said center line and reduced in radial distance away from said center line, and placed within a delivery cannula having a diameter less than said turn height when in said austenite phase.

Claim 15: The implant of Claim 1 wherein turns adjacent a middle of said spring have a height greater than turns of said spring adjacent ends of said helical spring.

Claim 17: The implant of Claim 1 wherein said turns have said turn height, in a direction perpendicular to said center line and adapted to be oriented vertically when implanted, less than a turn width; said width defined as being in a direction perpendicular to said center line and adapted to be oriented horizontally when implanted.

Claim 50: An implant for location within an intervertebral space between a pair of adjacent vertebrae, the implant comprising:

a helical spring having a plurality of turns about a center line;

said helical spring adapted to be located with said center line extending within a plane located between the two vertebrae;

said helical spring adapted to encounter compression loads transverse to said center line;

said helical spring adapted to flex in a direction transverse to said center line responsive to said transverse loads; and

said center line being non-circular when said helical spring is unloaded and at body temperature.

Claim 51: The implant of Claim 50 wherein said center line extends substantially linearly when said helical spring is unloaded and at body temperature.

Claim 53: The implant of Claim 50 wherein turns adjacent a middle of said helical spring have a height greater than turns of said spring adjacent ends of said helical spring.

IX. EVIDENCE APPENDIX

No new evidence is presented with this appeal. As a courtesy prior art cited by the examiner is included herein. These prior art references include:

Exhibit A. US 5,556,413 (Lam)

Exhibit B. DE 101 30 825 A1 (Steffen)

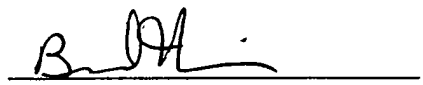
Exhibit C. US 5,716,416 (Lin)

X. RELATED PROCEEDINGS APPENDIX

Applicant is not aware of any related proceedings.

For the reasons advanced above, appellant/applicant respectfully submits that each of claims 1-3, 7, 10-12, 14, 15, 17, 50, 51 and 53 is patentable. Therefore, reversal of all rejections of these claims is courteously solicited.

Respectfully Submitted:



12-4-07

Bradley P. Heisler
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Date

DERWENT-ACC-NO: 2002-353549

DERWENT-WEEK: 200239

TITLE: Inter articular disk prosthesis, comprises a spiral which is made of a metal with memory, and has spherical ends extending into the prosthesis coupling knobs

INVENTOR: STEFFEN, H

PATENT-ASSIGNEE: STEFFEN H[STEFI]

PRIORITY-DATA: 2001DE-1030825 (June 26, 2001)

PATENT-FAMILY:

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APPLICATION-DATA:

PUB-NO	APPL-DESCRIPTOR	APPL-NO	APPL-DATE
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INT-CL (IPC): A61F002/44

ABSTRACTED-PUB-NO: DE 10130825A

BASIC-ABSTRACT:

NOVELTY - The inter articular disk prosthesis comprises spiral (3) which is made of a metal with memory, and has spherical ends (4) extending into the prosthesis coupling knobs (5). As a result of the spring force of the spiral, the coupling knobs are securely seated in the base and cover plate of

the adjacent vertebras. Pimply surfaces (6) of the prosthesis promote bonding of the latter to the adjacent vertebras.

USE - For for replacement of natural inter articulate disks in the neck region of a human spine.

ADVANTAGE - The disk behaves biomechanically in a similar manner to a natural inter articulate disk.

DESCRIPTION OF DRAWING(S) - The drawing schematically represents the proposed
prosthesis.

Polymer hydrogel 1

Polyethylene cover 2

Spiral made of a metal with memory 3

Spherical ends 4

Coupling knobs 5

Pimply surface 6

(19) BUNDESREPUBLIK DEUTSCHLAND

DEUTSCHES PATENT- UND MARKENAMT

(12) **Offenlegungsschrift**

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(51) Int. Cl.[7]: **A 61 F 2/44**

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(43) Offenlegungstag: 7. 3. 2002

DE 101 30 825 A 1

Mit Einverständnis des Anmelders offengelegte Anmeldung gemäß § 31 Abs. 2 Ziffer 1 PatG

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(72) Erfinder:
gleich Anmelder

Die folgenden Angaben sind den vom Anmelder eingereichten Unterlagen entnommen

(54) Zervikale Bandscheibenprothese nach STEFFEN (CIDPS)

DE 101 30 825 A 1

Beschreibung

[0001] Die Erfindung betrifft eine Bandscheibenprothese, die den Ersatz der kompletten Bandscheibe an der Halswirbelsäule zum Ziel hat und sich biomechanisch wie eine natürliche Bandscheibe verhalten soll.

[0002] An der Halswirbelsäule kommt es nach operativer Ausschaltung eines Bewegungssegmentes (ventrale zervikale Fusion) zu einer Mehrbelastung der Bandscheiben in den benachbarten Bewegungssegmenten mit der Folge einer sogenannten "Anschlussinstabilität" und vorzeitigen Bandscheibendegeneration. POSPIECH und Mitarbeiter (1996) haben dieses Phänomen an humanen Halswirbelsäulen experimentell nachgewiesen. Sie konnten belegen, dass bei der ventralen Verblockung eines Bandscheibensegmentes das eingebrachte Implantat nicht in der Lage ist, die sonst von einer intakten Bandscheibe abgefangenen Belastungen abzumildern. Die geänderte Belastungsverteilung führt demnach zu einer Mehrbeanspruchung der Bandscheiben in den Nachbarsegmenten, insbesondere des unteren.

[0003] Vor diesem Hintergrund ist es die Aufgabe der vorliegenden Erfindung, mit einer künstlichen Halswirbelsäulen-Bandscheiben-Prothese die natürliche Bandscheibenfunktion zu simulieren.

[0004] Bei der Prothese (CIDPS) handelt es sich um ein osmotisch aktives polymeres Hydrogel, das von einer gewebten Polyethylen-Hülle umgeben ist und eine definierte Wasseraufnahmekapazität besitzt. Die Steifigkeit der Prothese wird durch die Federkraft einer in die Polyäthylen-Hülle eingebrachten Spirale aus Titan-Nickel-Memorymetalldraht gewährleistet, die das Implantat fest in den Zwischenwirbelraum einklemmt. Die noppenförmig gestaltete Oberfläche der gewebten Polyethylen-Hülle erlaubt einen knöchernen Einbau der Prothese im Grund- und Deckplattenbereich der benachbarten Wirbelkörper. Zur Verhinderung einer Prothesendislokation ist das Implantat deckplattenwärts an beiden Seiten mit zentralabragenden halbkugelförmigen Sicherungszapfen versehen, die mit dem Memorymetalldraht in Verbindung stehen und korrespondierend in die vorgefrästen Öffnungen der Grund- und Deckplatte der benachbarten Wirbelkörper zu liegen kommen.

[0005] Mit einer speziellen Implantationszange, die eine temporäre Kompression des Implantates ermöglicht, wird die Bandscheibenprothese von ventral in den Zwischenwirbelraum eingebracht.

[0006] Die Zeichnungsfiguren zeigen schematisch eine Schnittansicht der Bandscheibenprothese und einen Ausschnitt der Implantationszange.

Literatur

[0007] POSPIECH, J.; WILKE, H. J.; STOLKE, D.: Experimentelle Untersuchungen zum intradiskalen Druckverhalten zervikaler Bewegungssegmente. In: Die Bandscheibe und ihre Erkrankungen, Hrsg.: Erich Schmitt und Rüdiger Lorenz, 18. Arbeitstagung der Gesellschaft für Wirbelsäulenforschung e.V., Ferdinand Enke Verlag Stuttgart 1996, Seite 21–25

Patentansprüche

1. Bandscheibenprothese, bestehend aus einem osmotisch aktiven polymeren Hydrogel (1), das von einer gewebten Polyäthylen-Hülle (2) umgeben ist, in der sich die Memorymetall-Spirale (3) befindet, die konzentrisch um das Hydrogel (1) angeordnet und an ihren Enden kugelförmig (4) gestaltet ist, **dadurch gekennzeichnet**, dass die Kugelköpfe (4) in die Sicherungszapfen (5) hineinragen und durch die Federkraft der Spirale ein fester Sitz der Sicherungszapfen (5) in der Grund- und Deckplatte der benachbarten Wirbelkörper gewährleistet wird, so dass eine spätere knöcherne Verbindung zwischen der noppenförmig gestalteten Prothesenoberfläche (6) und den benachbarten Wirbelkörperabschlussplatten möglich ist.

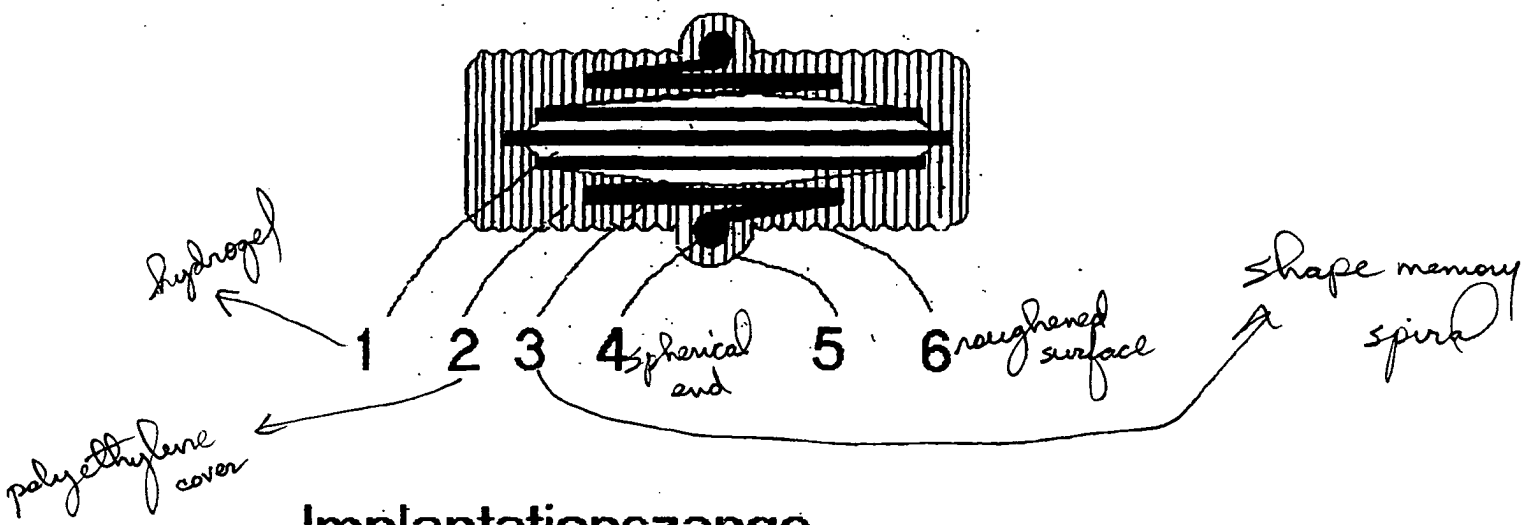
2. Implantationszange, bestehend aus zwei beweglichen Branchen (2), die beim Implantationsvorgang der Prothese eine temporäre Kompression derselben erlauben, dadurch gekennzeichnet, dass beim Zurückziehen der Zange aus dem Zwischenwirbelraum der durch eine hülsenförmige Arretierungsvorrichtung geführte Stempel (3) ein ventrales Herausgleiten der Bandscheibenprothese verhindert.

Hierzu 1 Seite(n) Zeichnungen

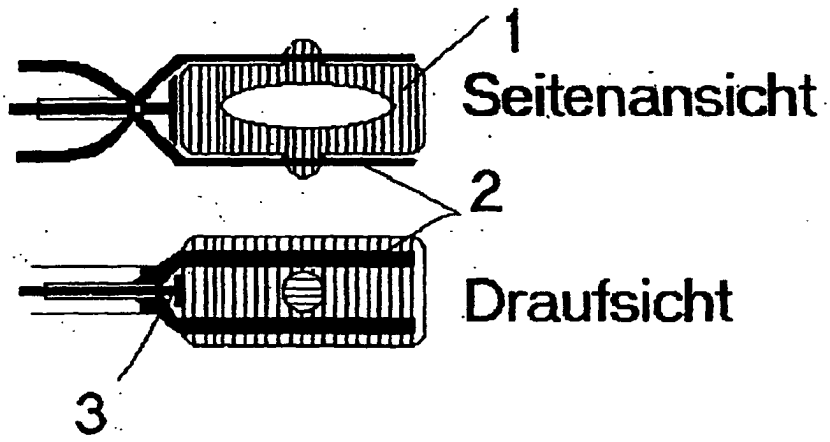
- Leerseite -

Nummer: DE 101 30 825 A1
Int. Cl.[7]: A 61 F 2/44
Offenlegungstag: 7. März 2002

Bandscheibenprothese



Implantationszange



RESULT LIST
1 result found in the Worldwide database for:
DE10130825 (priority or application number or publication number)
(Results are sorted by date of upload in database)

1 **Inter articular disk prosthesis, comprises a spiral which is made of a metal with memory, and has spherical ends extending into the prosthesis coupling knobs**

Inventor: STEFFEN HELGE (DE)
Applicant: STEFFEN HELGE (DE)
EC: A61F2/44B; A61F2/44D; (+1)
IPC: ***A61F2/44; A61F2/46***; *A61F2/00* (+6)
Publication info: **DE10130825** - 2002-03-07

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